AMERICAN DYESTUFF REPORTER

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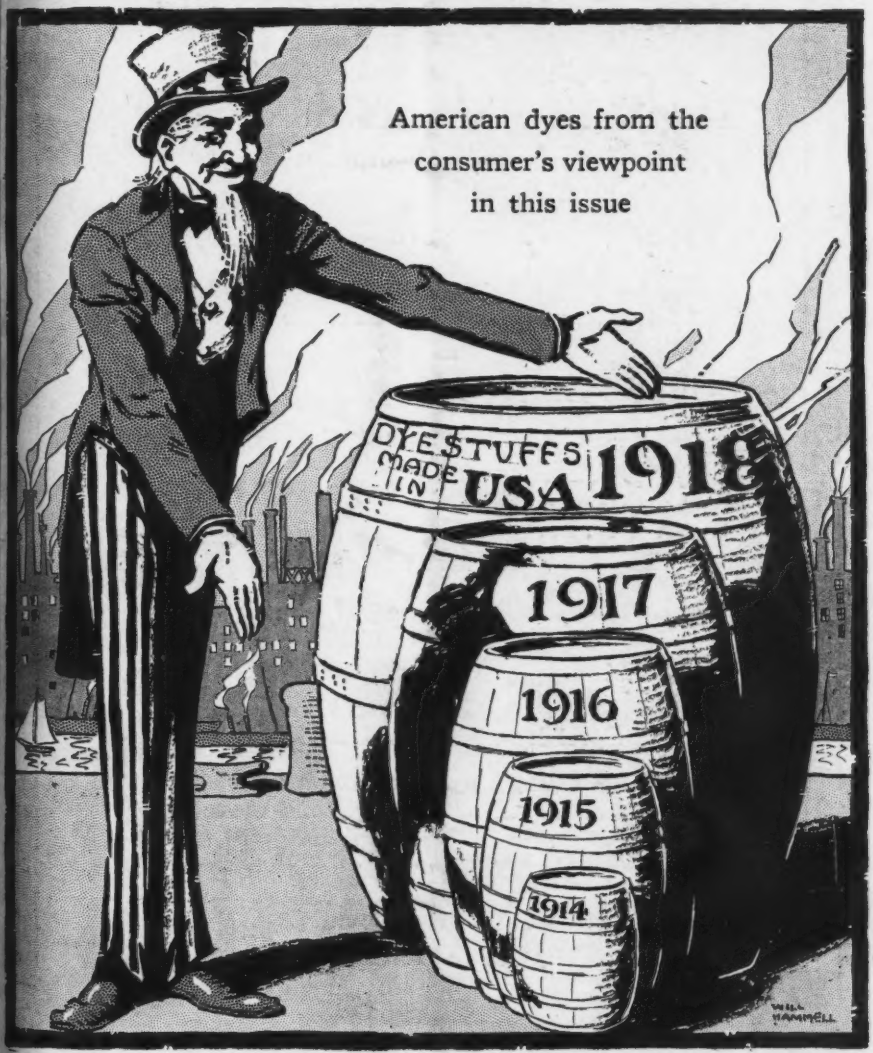

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In assuming control of the

American Dyestuff Reporter

the publisher announces the following

EDITORIAL POLICIES

To devote the Reporter wholeheartedly to the development of a permanent domestic dyestuff industry in America.

To advocate everything which will expedite this development and oppose everything which will retard it.

To eradicate the widely held conviction among consumers and the general public that American dyes are at best "makeshifts."

To expose and condemn everything in this industry which smacks of German propaganda.

To stimulate co-operation and mutual helpfulness between manufacturers and consumers.

To foster a spirit of tolerance on the part of consumers with the efforts which manufacturers are making to supply their needs.

To advocate such tariff or other legislation as may be essential to the welfare of the industry.

To encourage constructive co-operation and discourage destructive competition between manufacturers—both large and small.

To make our circulation cover every field which consumes dyestuffs and to supply these consumers promptly with authentic information regarding the development of American colors and the most approved methods of their use.

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AMERICAN DYESTUFF REPORTER

A Weekly Publication devoted to

DYESTUFFS, COLORS and ALLIED CHEMICALS

"Circulated Everywhere Dyestuffs are Used"

Vol. 3 New York, July 8, 1918 No. 2

Concerning Consumers

Straws Show that the Wind of Public Sentiment Is Blowing No Good to the Dye Industry at Present

STRAWS are frequently thought of in connection with bricks, drowning men and cooling drinks. They are also said to indicate whither the wind blows, and it is in this connection that they have been occupying the attention of the AMERICAN DYESTUFF REPORTER for the past few weeks.

An ubiquitous investigator connected with this publication determined to conduct an experiment calculated to throw into bold relief the determining factors which go to make up the present, up-to-the-minute attitude of the general American lay public toward the American dye industry of to-day. This sounds like a bold undertaking—and to some, no doubt, an impossible one. Whether or not it is possible to gain any accurate idea of this attitude by the methods employed will, it is expected, be the subject of more than one debate. But the experiment has been an interesting one, and belief in its accuracy is strengthened by the fact that its results check so closely with the impression already gained by those most intimately concerned with the dye industry.

The question of taking anything like a national census was immediately dismissed for obvious reasons. So also was the idea of canvassing the patrons of any particular department store. One of the aims of the experiment was to keep subjects of it in ignorance of the fact that they were being interviewed with an eye to the compilation of statistics later on. The present article does not purport to be a collection of facts, but of beliefs. Its object is to stimulate the dye trade associations into further efforts to alter or modify certain lay beliefs about the industry, and to substitute entirely fresh beliefs in place of certain others.

By far the largest portion of dyestuffs consumed in this country are used in the textile industries. And it will readily be conceded that the great majority of purchasers of textiles in one form or another (speaking, of course, of ultimate consumers) who really care a great deal about the dyes employed and who are likely to devote much thought to the subject, are women. A man will often read to his wife a passage in the daily papers relative to the dye situation, but she, in turn, will tell him what she thinks about the subject from her own personal experiences. And it is from her that the man not engaged in or connected with the industry himself, will finally come to form his impression, nebulous and hazy though it may be.

Hence, for the purpose of obtaining a representative expression of the opinion of the public as a whole,

twenty-five women were carefully selected and interviewed under the following conditions. Each was, of course, a practiced shopper. Each was chosen with the purpose of making the whole body a typical cross-section of our present social structure as based on general education and experience, from "cellar to garret" and from side to side. In not one single instance did the questioned ones know they were talking for publication, being inveigled into expressing themselves under the guise of casual conversation. All were (we blush to say it) well past the "sweet young thing" period and well able to take an interest in practical affairs. Many, indeed, were self-supporting. They were, in all but three cases, unacquainted with one another, and lived in localities as far south as Georgia and as far west as Los Angeles. They consisted of housewives, women of means —and hence of leisure—stenographers, domestics of the better class, factory employees, business women, department store saleswomen, a department store buyer, and an advertising woman. Who shall say that the opinions of this array are not representative!

The general indications apparent upon reviewing the fruits of this fascinating research are that the present attitude of the public towards American dyes is still far from ideal. It is, in fact, rather worse than the writer expected to find it, and it emphasizes anew the necessity for more educational work calculated to change this attitude. The writer is aware of the difficulties, is aware that manufacturers still have their hands too full to do all in this respect that they would like to, and is further aware that really substantial progress has already been made—but on this experiment feels justified in basing his belief that we have only made a beginning thus far.

The exhibit of the National Aniline & Chemical Company at the recent textile exposition is a striking example of what may be done. For general educational value and for convincing effect upon a large number of people, it has not been equalled by the effort of any other individual concern. Yet, just to illustrate how even such a clear and forceful piece of propaganda may sometimes fail of the desired effect, one of the Twenty-five accompanied the writer to the stand on which the dyed fabrics were displayed for comparison of American and German dyes, ran a practiced eye over the entire lot and triumphantly announced that it certainly showed the inferiority of American dyes, no matter what the company said! This was from an educated woman. We make it "Exhibit A" of this compendium, and pass along without further comment.

Two of the Twenty-five did not know that American dyes had as yet come into use in this country! They seemed pleased to learn this fact and asked when they might expect garments that would not run as much as some they had purchased recently. Both were well educated and well read. They were interviewed separately. We will label these cases "Exhibit B."

Fourteen out of the Twenty-five said in effect that they had often wondered how American dyes were "coming along" and why they couldn't be "sure" any more that the clothes they bought would not impart some of their varied hues to the underclothing and persons of the wearers. They apparently had a strong impression that once upon a time —before the war—they *could* be sure of this. They had not found much literature recently about the fastness of American colors in the consumer periodicals devoted to the particular interests of women. They had "gathered" that American colors were equal to German, but still, what good did such information do them when you couldn't depend on anything being fast. It was all very well to talk, but hadn't they the evidence of their senses? No, they

FRED WETZEL & CO. N.Y.

didn't believe that all the statements were lies, but . . .

Another—a buyer for a department store—appeared to be better informed than any of the others. She said that she had always known that some dyes were fast on one fabric and not on another, but that she hadn't known before that this was the reason for many of the complaints, although she might have readily comprehended this had it been called to her attention. What, then, was the sense of advertising that American and German colors were now practically equal if that fact didn't mean that one could guarantee the domestic dyes?

Four more declared they had thought "the whole thing was settled long ago," and that there was now "nothing to worry about." True, they had had some trouble once or twice within the past six months, but had heard that it would soon be over, as American dyes were now as good as any ever brought here from abroad, they had heard, and, of course, that was partly camouflage, but still, they had no doubt but that they soon would be. And anyway, we were now making even greater quantities of dyes than we used to buy, so, of course, the idea that some people had that there weren't enough to go 'round was absurd.

The remaining three expressed mild dissatisfaction with the dyes they had been sold — without guarantee — and hoped that some day things would be straightened out. They felt that in general the dyes were not so bad as they had been, and believed that the manufacturers of this country should be encouraged.

This completes the tabulation, and it is believed that the average of these opinions will be found to be the general opinion and belief of the average consumer. Little need be added. It is only a question of presenting facts—which has been done repeatedly—in a clearer form—which has *not* been done repeatedly.

On the whole, the spirit and patriotism of those interviewed was excellent. Confusion of mind was the principal trouble with most. In nearly every case the information leading to this confusion was based principally upon superficial knowledge. Further questioning usually revealed that this "knowledge" was based upon hearsay and general gossip, which, in turn, was based upon information regarding American dyes, received either in person, or via shopping friends, from department store employees.

Practically all had read more or less on the subject, and in many cases the dissatisfaction felt appeared to result from disappointment. Hopes had been raised too high by headlines telling of the quantities and virtues of American dyes. In all cases these were the facts which had registered, and not the qualifying facts which would tend to explain cases of fugitive colors and the necessity for yet more patience.

The remedies are obvious: send more lucid literature to the women's magazines, and educate the department-store clerk.

NEW DU PONT OFFICE

To take care of the sale of dyestuffs in New York State northern New Jersey and western Connecticut, the sales department of E. I. du Pont de Nemours & Co., of Wilmington, Del., has opened a new office at 21 East 40th street, New York. E. V. Patterson, who for the last year has been in charge of the Charlotte, N. C., sales office of the company, will have charge of the new office and sales. Other units of the Du Pont corporation, the Du Pont Fabrikoid Co., Harrison Works and Arlington Co., will occupy the entire fourth floor of the same building. The Du Pont dyestuffs manufacturing department is now producing synthetic indigo on a large scale. The Du Pont Company in a recent statement says that this production "will soon be followed in a progressive way by the synthesis of other most difficult and valuable dye intermediates and dyestuffs in order to insure fully the independence of the United States from foreign products."

AMERICAN DYESTUFF REPORTER
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Pointed solely toward the welfare and growth of the American Dyestuff Industry. Unbiased contributions appreciated.

A. P. HOWES, Editor and Publisher

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Our Inquiry Department

The REPORTER in the past has endeavored to supply its readers with an information service designed to assist them in the solution of any technical difficulties which may have perplexed them. During recent months, because of considerable congestion in the offices from which the REPORTER was formerly published, many inquiries of this sort have not, we fear, received the attention to which they were entitled. For any shortcomings in this respect we apologize most sincerely.

From this time forward it will be our nearnest endeavor to offer our readers every cooperation possible. We shall be very glad to receive your inquiries, of whatever nature, so long as they are related to the dyestuff industry, and will see to it that they are handled expeditiously by the persons affiliated with our organization best qualified to pass upon them.

The Tariff on Concentrated Dyes

THE REPORTER is in receipt of the following letter from Mr. McKerrow, of E. F. Drew & Co., Inc., which corrects, and quite rightly, a wrong impression which might have been gained from an editorial in our issue of July 1st.

To the last paragraph of Mr. McKerrow's letter, in which he says that he finds the trade press of the dyestuff field to be "muzzled," we take exception. We believe it is, in certain cases, true that papers do not care to give what might be called free expression to all sides of all situations, but we believe that this policy is, in most instances, dictated by what the editors honestly believe to be for the best interests of the industry—certainly we know that this is the case so far as the REPORTER is concerned. We shall, in every case, be most happy to give full and free publicity to every side of matters pertaining to the dyestuff industry unless we are convinced that some of the matter for which publicity is asked would be detrimental to the best interests of the industry as a whole.

After all, we must remember that the primal duty of American manufacturers and consumers of dyestuffs and those who serve them is to build up an American industry and to place it in a position so strong that it will be able effectually to resist renewed German onslaughts.

Mr. McKerrow's letter follows:

"New York, July 3rd, 1918.

"Mr. A. P. Howes, Howes Publishing Co., 470 Fourth Ave., City.

"My dear Mr. Howes:

"1. The second editorial in your issue of July 1st is incorrect. If the duty on dyestuff was assessed on a purely ad valorem basis, what you say would be all right, but, as a matter of fact, the duty is assessed in two ways—30 per cent. ad valorem and 5 per cent. per pound specific. It is the second classification which enables the importers of concentrated dyes to evade a portion of the duty.

"2. For instance,—suppose a dye in its commercial strength is worth $1.00 per pound; it pays 30 per cent. ad valorem and 5 per cent. per pound specific duty, making a total cost, duty paid, of $1.35 per pound. If this dye is brought over in a concentrated form, say ten times the commercial standard, then, if it was honestly invoiced, it should be invoiced at $10.00 per pound, and would carry 30 per cent. ad valorem, making $13.00, but it would not pay any higher specific rate per pound than the unconcentrated dye, or 5c. per pound, making a total of $13.05. Divide this by ten to bring it down to a parity with the commercial standard

and this concentrated dye would be landed here, duty paid, for $13.05, thus evading 4½c. per pound, as against the commercial standard.

"3. I trust this is clear to you.

"4. I am interested in noting the change in the management of the DYESTUFF REPORTER, and wish you every success. You can only carry out the ideal principles you announce by refusing to be muzzled by your advertisers. Practically every trade paper to-day is so muzzled, and, therefore, a full and free exposition of the dyestuff situation cannot find expression in the columns of any trade publication that I know of; as a matter of fact, the American dyestuff industry is in a very critical and dangerous state, and there are certain phases of it which should receive public attention, but which have not done so with the exception of two articles which I wrote, and which were published in the *Christian Science Monitor* of June 4th and 8th. The *Christian Science Monitor* also had a strong editorial on the situation on June 13th.

"I remain,

"Yours faithfully,

"(Signed) H. G. MCKERROW."

DYESTUFFS AT CHEMICAL EXPOSITION IN JAPAN

A chemical industries exhibition was held in Tokio towards the end of last year, and the display, according to H. M., Commercial Attaché at Yokohama, was quite a worthy one, and showed what great efforts are being put forward to make Japan as far as possible self-supplying as regards chemicals, attention naturally being paid, in the first instance, to those of industrial importance. Unfortunately, it was impossible to distinguish home from imported products, as there was nothing to indicate which products had been made in Japan. The most important chemical products displayed in the exhibition were (1) dyestuffs, (2) acetic acid, etc., and (3) dicalcium phosphate.

With its rich extent of forest land, Japan is favorably situated for the production of acetic acid, and this industry seems to have come to stay. In 1912 there was an import of acetic acid into Japan valued at over £700; this has been transformed into an export of the value of £250,000 in the first nine months of 1917. The present abnormal demand for acetone for the manufacture of explosives will no doubt decline after the war, but the demand in other directions should more than compensate for this.—*Daily Commerce Reports.*

The Consumers Dyewood Products Corporation, with authorized capital of $300,000, is building a plant near Mobile, Ala., on the Gulf, Mobile and Northern Railroad. G. A. La Vallee, president of the dyewood company, says they have chartered vessels to bring logwood from Haiti. The finished products are to be shipped to the Obex Company, Marietta, O., in which Mr. La Vallee is also interested.

The plant will cover ten acres. The capacity will be about 1,800 barrels of extract per month. Mr. La Vallee and G. P. Ward, assistant treasurer, will live in Mobile. The offices of the company remain in New York. By locating the plant at Mobile the company avoids transportation of the logwood sticks and consequent delays.—*Drug and Chemical Markets.*

A new company has been organized in Boston to manufacture dyestuffs, the organizers of which have been associated with F. E. Atteaux & Co., dyestuff dealers of that city. These men are Frederick E. Atteaux, John W. Linnehan, Louis L. Briden and Matthew Kinniburgh and associated with them is T. Terwellier, a chemist of New York City. The nominal capital of the company is $150,000. A plant has been purchased at Poughkeepsie, N. Y., and several of its products are now on the market.

By boiling seaweed with carbonate of soda, and treating the filtered solution with sulphuric acid, a substance is produced that has more viscosity than starch or even gum arabic, and that can be profitably employed in stiffening various textile fabrics.

Why England Lost the Coal-Tar Color Industry

NEW light on the reason why England, home of the first coal-tar dye, allowed the industry to slip away from her and into the hands of Germany, was thrown in an interesting and original manner by R. E. Oldroyd, F.I.C., in a paper on "The Coal-Tar Color Industry" read before a recent meeting of the Lancashire Section of the Textile Institute, England. There have been many addresses delivered on this subject before, some of which have been given to readers of THE REPORTER, but few of which have equalled the following for frankness.

Aside from its unquestioned interest, the paper, which was printed in the *Journal of the Textile Institute* for May, 1918, is believed to contain a lesson which might not go amiss if applied on this side of the water. The paper follows:

In trying to understand how we lost the coal-tar color industry, one of the most difficult factors to reckon up fully, is the state of advancement in chemical knowledge at the various periods in the history of the industry. The industry, depending, as it has shown itself to do, on the science basis of organic chemistry, was indeed out ahead of the science, from the discovery of the first color in 1856 down to nearly 1870, from which period the science has guided and led the industry fully, and made of it a branch in the science of organic chemistry — perhaps at once the most fertile, the most interesting, almost, I might add, fascinating and useful branch to be found attached to any parent tree of science.

The year 1856 found us pre-eminent amongst nations as manufacturers of textiles—a position we had achieved by practice, and gradual improvement of certain fundamental inventions originating here, and backed also by an expert knowledge which our dyers had acquired in the application of the natural dyesuffs. It also found us with new gasworks in our large towns—gasworks developed during the preceding 30 to 40 years—gradually becoming choked in development by the vast accumulations of the useless waste product, tar. No use could be found for the tar, and, consequently, it had no value; indeed, it had less than no value, it was a nuisance. Who would then have predicted that, ultimately, this so-called nuisance was to have a value exceeding that of the gas itself? Such, however, was to be the case, for in the year in question came the great discovery which was to give a new importance and value to the tar, and consequent cheapening and further development of the gas industry, and also to start forward the now gigantic industry in the manufacture of colors from coal-tar products. Perkin's mauve, discovered in the year named, must and will for all times stand out as the landmark from which the coal-tar color industry sprung.

When he made the great discovery which was to start forward a great industry, as, probably, you are all aware, Perkin was only 18 years of age, and still a student under the great Hofmann, who was Professor of Chemistry at the Royal College of Chemistry, London, and whose was, without question, the master-mind of the period in this branch of science. He and his students undoubtedly carried forward the early development of the industry, and it was he who started forward the work which ultimately placed the industry on a scientific basis.

Working under Hofmann, or elsewhere, at or about the period, we had Kekule, who was afterwards to place the industry on a real and secure foundation of science; Otto N. Witt, afterwards, perhaps, the captain of science who in this field had the training of probably more of the German army of chemists than any other man; Caro, who founded the great Badische Company; Martius, who did the same for the Berlin Aniline Company; A. Leon-

hardt, the founder of A. Leonhardt & Co., Mühlheim, and others. Yet we, the richest among the nations at the time, allowed them all to go to Germany.

These were the men who, without any doubt, built up the industry for Germany. We let them go, and now there are those who ask: "Why did we lose the industry?" Let us be honest, and at once state the truth. There can only be one answer—we did not want it to develop. From the selfish and narrowminded view we took of the position, we persuaded ourselves it was likely to hurt certain interests. Those interests had influences behind them sufficiently powerful to hinder the development, and were so egotistically blind as to imagine there was only one nation on the face of the earth at the period—England.

It is stated now, that "our education on this subject was, and always has been, poor." This is where we lose the proper prospective. We must remember there was little of real scientific knowledge of this subject at the period, and therefore everyone's education was poor. When I remind the chemists present that the fundamental truth on which the understanding of the chemistry of the aromatic compounds depends, namely, the tetravalency of carbon, was not acknowledged and recognized, they will at once see how little real knowledge there could be on this subject at the period. Our general education in this particular branch was certainly in front of that of Germany, and for years afterwards we were the principal coal-tar color makers. Also, our education was just what we wanted to make of it.

FRED WETZEL & CO. N.Y.

REFINED COAL-TAR PRODUCTS

Benzol, Pure
Benzol, 100%
Benzol, 90%
Benzol, 50%
Benzol, Straw Color
Toluol, Pure
Toluol, Commercial
Toluol, Straw Color
Xylol, Pure
Xylol, Commercial
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Naphthalin, Large Balls
Naphthalin, Crushed
Naphthalin, Powdered
Naphthalin, Granulated
Naphthalin, Rice
Naphthalin, Lump
Naphthalin, One-ounce Cakes
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Phtyalic Acid Anhydride

Crude Carbolic Acid, 97-99% Straw Color
Crude Carbolic Acid, 95% Dark
Crude Carbolic Acid, 50% 1st Quality
Crude Carbolic Acid, 25% 1st Quality
Crude Carbolic Acid, 15% 1st Quality
Crude Carbolic Acid, 50-60% 2nd Quality
Crude Carbolic Acid, 25-30% 2nd Quality
Crude Carbolic Acid, 10-15% 2nd Quality

We invite inquiries for the various products listed above, but would call attention to the fact that on some of these items present heavy contract obligations make immediate offerings impossible.

The Barrett Company

17 Battery Place *Chemical Department* New York, N. Y.

After tracing developments following upon Perkin's mauve, the author proceeded to consider the reception of the new colors, and observed:

First, let us see how the dyers received these new colors. Our dyers, at that period, were indispensable to the continuance and development of the textile industries. The dyer's value depended on a knowledge of processes carried out from well-studied recipes, entirely his secret, to be handed down from father to son, or master-dyer to a high-premiumed apprentice. Many of these processes are well worth a study even to-day. The dyer, by a knowledge which was entirely his own, was indispensable. With the knowledge of our national conservatism of character before us, do you think it likely that the dyer would welcome the advent of colors calculated to remove, be it ever so little, his indispensability? Certainly not. The dyers, undoubtedly, were antagonistic to the development, and this antagonism continued for a great many years.

Now turn to the manufacturers, who have seen their businesses made into the solid success attained by the quality and coloring given to their materials by the natural dyetuffs, and which had become recognized and well known in the markets in which they were sold. Think once more of our national conservatism and antipathy to any change whilst holding a good thing. No, the general reception from this factor was not encouragement to aid the development. They were doing well, and, therefore, they wanted to let well alone. In one sense they acted rightly, as these, the first colors, although very bright and novel, were soon found to be fugitive; but the brightness gave a novelty which soon created a call for them, and although the manufacturers in general showed no great appreciation, the national character then was not so very different to that of to-day. And, with eager suspicion, they watched their neighbors and competitors, to see if they introduced them; and when one of them found use for them, it was not long before others followed.

Turn now to another factor—the one with the greatest backing of influence in high quarters—the heavy chemical trade. At the period, this trade was simply coining money by supplying to the dyers the many heavy chemicals and wonderful mordants to fix the natural colors on the fibres. The new coal-tar colors, for wool and silk, did not require any of these high-priced fixing chemicals. Was it likely, then, that the heavy chemical manufacturer would welcome and help forward the development of this new industry, which promised for him the disturbance of his vast investments in the form of very remunerative capital? Certainly not. Some, however, of the large chemical manufacturers did go half-heartedly into the new manufacture, but they could never grasp the great probability that the new was likely to outstrip the old.

Therefore, the influence of the heavy chemical manufacturers was working strenuously against the new industry. This, backed by the opposition of the dyers and indifference of the textile manufacturers, lost us the coal-tar color industry, particularly when it was finally backed up by the crowning factor of all, which came from the short-sighted and selfish policy which soon actuated our first color-makers themselves. The colors, by their novelty and brightness, quickly compelled a demand which soon far exceeded the supply. To-day, it is difficult to realize what a great novelty they formed then. The first makers soon found they were in possession of veritable gold-mines, around which—figuratively speaking—they staked their claims, and did everything in their power to keep away other investigators and prospectors. In this attempt to keep other prospectors from working on and developing the principal gold-bearing seam of the period, namely, magenta, another factor—al-

ways detrimental to quick advancement —was introduced, namely, law, which thus early had the opportunity of investigating the possibility of this new gold-mine industry. The result was inevitable. The law has kept a watching brief for the industry, and incidentally for law, ever since, and you know what that means for the interest outside that of the law itself. And, since the war started, we have been very pointedly shown that only the law was considered capable of controlling this industry.

Hofmann was allowed to leave the Royal College of Chemistry in 1865, just when we must have realized what a profitable industry had sprung up in our midst, and which must then have shown that its development must depend on increase in knowledge of organic chemistry. But from that date extending through the most prosperous years of the industry we have known, down to 1874, when the Chair in Organic Chemistry was created for Schorlemmer in Manchester, there was no Professor of Organic Chemistry in the country. It is a sad and distressing record. Could a full analysis be made of the several influences which brought about this state of affairs, I am afraid it would only bring out in bold relief some of the predominant and natural failings of our race. To Lancashire, however, is the credit for the first realization and admission of the sins of past omission, and the starting forward of the movement to remedy these by the creation of the Chair of Organic Chemistry in Manchester, at Owens College.

Now, I want very briefly to look at the few greater and more important dyes and groups of dyes, which came afterwards, and note economic mistakes we made; and then, briefly, to give a record of actual practical experience to prove the statements already made.

In 1868, the coloring matter of madder was made synthetically, in the laboratory, from anthracene obtained from coal-tar. It was a great discovery and offered great possibilities, as, in that year, roughly, one and a quarter million pounds sterling worth of madder was imported for use in our dye and print works.

The laboratory method was, however, too costly. Perkin, again, had more to do with the discovery and working out of the commercial and practical method for the manufacture of this product than anyone. The changes from the raw product, anthracene, to the pure color, alizarine, were comparatively so simple and so cheaply done that, in a few years, madder was beaten out of existence.

For years we were the largest alizarine manufacturers. The German saw possibilities which, from lack of initiative and enterprise, we failed to grasp. On this account we allowed them to outstrip us and build up their vast concerns. Alizarine, and alizarine products, undoubtedly made for the rapid growth of the three largest firms—The Badische Co., Meister-Lucius-and Bruning, and the Bayer Co. It is worth repeating that for years we were the largest makers of alizarine, and to point the moral—that when the war started

Frank Hemingway, Inc.

115 Broadway, New York

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CHROME BROWN
DINITROBENZOL
BENZYL CHLORIDE
SALICYLIC ACID
PICRAMIC ACID
ORTHONITROPHENOL
PARANITROPHENOL
BENZIDINE SULPHATE and BASE

Manufactured by

The Butterworth Judson Corp.

WORKS
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Boston, Mass.

each of the firms named employed about 10,000 workers.

About ten years later, a new group of dyestuffs began to appear. This quickly impressed the whole dyeing industry with its importance, and it was destined to revolutionize, first wool and silk, and afterwards cotton dyeing, etc. This was the azo colors, called by this general term to indicate a certain internal general chemical formation peculiar to the whole group.

The discovery of this, the azo reaction, was made, again in England, in one of the laboratories attached to a brewery at Burton, by Peter Griess. Here, also, the first color was made. Griess, too, did much of the earlier research on this group of colors, but we allowed Germany to reap all the fruits of his labor, and by the development of this group take from us the lead we had hitherto held as a color making country.

It was now, more than ever, that we needed the research workers which we should have had if Hofmann and the others had been retained. A few of the earlier workers for us in this field, notably the late Professor Meldola and Sir W. Perkin, at this period pointed out the danger to our industries if Germany was allowed to get a complete monopoly of this key industry, and they asked of our legislators the necessary help to finance the development of research work and encouragement of the trade.

The azo colors were cheap. This appealed strongly to us, and we never considered that, whilst comparatively cheap to us, they still gave great profits to the German makers, who thus shared in the profits of all the materials we made into which we introduced their coolrs.

The azo colors completely revolutionized, first wool dyeing, and, later, with the discovery of further intermediate bases, cotton dyeing. Not only dyeing, but, to a certain extent, manufacture was altered, as the properties of certain of the dyes were found to be different, and better in certain respects, to the natural colors they now supplanted largely. The dyes would stand different finishing methods, so new cloths entirely were made by taking advantage of these properties.

Then, as the azo color reaction became better understood, the dyers were actually called upon to make these colors on the fibre in the dyeing operation. England, again, through Messrs. Read Holliday's vacancine red, was the first to suggest paranitraniline red, the color most largely produced now in this way. It was afterwards found that many of the azo cotton colors could be changed by the dyer into other colors on the fibre, and the method—very useful to Lancashire — of diazotosing and developing of colors on the fibre was evolved.

Primuline, undoubtedly, was the dye which developed this useful process. It was discovered, again in England, by Professor Green when quite a young man, and when engaged as a chemist for the then most important color firm of Messrs. Brooke, Simpson and Spiller.

Let us see what Professor Green said about the first reception of primuline by the manufacturers and dyers. He said: "After the dye was ready for

PARAPHENYLENEDIAMINE BASE
FUCHSINE CRYSTALS
METHYLENE BLUE
METHYL VIOLET
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commercial introduction, my firm decided to send me on a tour of introduction of the new product through the dyehouses of Lancashire and Yorkshire." He told of his reception at the various works, along with Mr. Wynter, their Lancashire representative. He said: "We received in Lancashire more cold water than anything else, and only a few firms, notably, Messrs. Worrall's, and Messrs. John Bright and Bros., of Rochdale, evinced much interest in the new dye."

Now, we come to the most serious side of the development. From some time which I place—by comparing side by side the advances in science and the industry—about the Jubilee Year, 1887, the German has undoubtedly seen a connection between color and explosive manufacture for war purposes, and has gradually worked with the end in view to acquire a complete monopoly of the chemicals and intermediates in which this connection was obvious.

When the sulphur group developed from 1893 onwards, our few English makers still left to us who had struggled on, with little encouragement, went more in for making this group, and gradually began to recover ground. Large quantities of sulphur black in particular were afterwards made here, constantly increasing in spite of the frantic efforts of the German makers, both by price-cutting, and the law courts, to stop the increase. The intermediate required for making this is nearly related to picric acid, and through it with lyddite, and melinite. This was probably more alarming to the German than the competition in the dye markets, since if we developed sulphur black manufacture we must also develop the making of a product available for war use at a moment's notice.

The last group of dyes I wish to mention, namely, the vat colors, was developing right up to the beginning of the war, and was materially changing Lancashire's manufacture. The vat colors resulted in one division, by the chemist changing the chemical indigo molecule, and, in the other section, the chemical alizarine molecule. This group of colors was to be the despair of our chemists, according to many of our high authorities who had persuaded themselves that the German chemist was omnipotent. Our chemists were told by these authorities that they would not make the vat colors for indefinite years. What has been the result? Our chemists have thrown back the taunt by attacking this complicated group first, and with a great amount of success, and we already have our ranges of solvay, chloranthrene, and duranthrene dyes. Possibly, they have wished to show what they could do with the complicated colors, so as to create a confidence in what they will do for the simpler products when the opportunity comes by the release of chemicals and intermediates now used for war purposes.

Let us now, therefore, give to our chemists our wholehearted support. Remember, it is they who have saved the nation. Is it too much to expect them to save for us the color industry?

The color industry has shown itself to be far too dangerous a weapon to leave almost entirely in the hands of the German.

This brings me to the last point I want to make, and at the moment, perhaps, the most serious. I want to ask: How many have realized that capital invested within these islands can never enjoy that security it had in the past without the aid of unending research, yet to be done, and costing what it may? Capital always follows security. The very foundation of this security has been changed, and weakened for us, by chemical research bringing developments which have resulted in a complete change in the source of supply of the principal chemical essential for explosives manufacture, namely, nitric acid, the chemical by the manipulation of which Germany showed she intended to make war upon us; and we knew it, but deliberately blinded ourselves to the

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consequences. The source of this almost entirely to everyone has hitherto been Chili saltpetre. We have still to depend on this source for our supply. Had Germany had to depend on this source, then our navy would already have ended the war. I think the serious position is rapidly being fully realized, for the "talk period" in regard to research for the making of synthetic nitrates, etc., is passed, and the work is being rapidly pushed forward. This is certain to develop. We dared not let it be otherwise; and we shall want to use this surplus nitric acid in peace times, and I am optimistic enough to prophecy we shall be able to find use for much of it in the coal-tar color works which will develop in our midst.

Apart from industrial security, we must for our very national safety have the color industry here, and I want to make this final appeal to you all, and to our Institute — to give whole-hearted support to efforts now being made, but as yet not quite so enthusiastically or so combinedly made as one could wish to see, for the regeneration of the color industry.

Researches connected with the indigo industry will be paid for out of the returns on a new export tax recently established on indigo in British India. According to the British "Board of Trade Journal," indigo produced in British India and exported to any port outside of British India, or to Aden, is subjected to cess at the rate of 1 rupee ($0.3244) per maund of 82 2-7 pounds. Mixtures of indigo with other substances will be taxed on part of the total weight in a manner to be specified in later regulations. The passage of the indigo cess act, as the measure is called, took place on April 1.

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IMPORTANT CHEMICALS UTILIZED IN BLEACHING, DYEING, AND CALICO PRINTING, THICKENINGS, ETC.

SULPHURIC acid is a thick, oily liquid without any color, but which at times is rendered brownish through the presence of small amounts of organic substances. For dyeing the ordinary commercial sulphuric acid, so called oil of vitriol, or D.V.O., is commonly used, which should contain 93-98 per cent. pure sulphuric acid anhydride, and is no longer used in dye houses. Sulphuric acid absorbs water from the air with great avidity, and should therefore be kept in closed vessels. On mixing with water it evolves great heat. In order to avoid dangerous heating up and spattering, sulphuric acid should always be diluted by being poured in a thin jet into a large quantity of cold water, stirring well all the time. The water should not be hot, nor should water ever be added to undiluted acid. Sulphuric acid diluted with half its weight of water does not become heated again severely. Sulphuric acid is sometimes used in place of hydrochloric acid for acidifying in bleaching and diazotising. As a rule it will be found that one part by weight of sulphuric acid will take the place of 2-2½ parts by weight of hydrochloric acid. The strength of sulphuric acid is determined by the hydrometer. Sulphuric acid 97.70 per cent. has the highest specific gravity, whilst that of stronger acid is slightly lower.

Hydrochloric, or muriatic, acid is met with commercially either as a colorless liquid, or colored greenish yellow by traces of iron. The commercial acid usually has a specific gravity of 26-28 deg. Tw., and is contaminated with iron, arsenic, sulphuric acid, and organic substances; for dyeing it is usually sufficiently pure. For Paranitranitine R it is best to use pure hydrochloric acid of 34-36 deg. Tw. Unlike sulphuric acid hydrochloric acid forms a freely soluble lime salt (calcium chloride), and is therefore to be preferred to sulphuric acid for souring off with a view to removing lime salts. In dyeing, hydrochloric acid is used for

the greatest variety of purposes, amongst others for preparing the diazotising baths, and for souring off in bleaching. The strength of hydrochloric acid is determined by twaddelling, and each degree twaddell indicates approximately one per cent. pure hydrochloric acid.

Copper sulphate, also known as blue vitriol, forms blue transparent crystals fairly soluble in water; 100 parts dissolve at

50° 68° 86° 122° 158° 194° 212° F.

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37 42 49 66 95 156 203 parts blue vitriol.

Bluestone is very largely used for the after treatment of Diamine, Immedial, and Hydron colors, sometimes alone, and then again together with potassium, or sodium bichromate; for Immedial colors it should always be used in combination with a bichromate. When using copper sulphate for the after-treatment the bath must not be turbid; this may easily be avoided by adding a sufficient amount of acetic acid. Copper sulphate improves to a very high degree the fastness to light of many colors, but not, however, of all colors.

Nickel sulphate, or sulphate of nickel, forms green crystals which are very freely soluble, and may be used in place of copper sulphate for the after-treatment of some of the Diamine and Immedial colors. Copper salts cannot be used in iron vessels on account of their action on the iron. Cobaltous Acetate consists of violet crystals which are very freely soluble, and may be applied for the same purpose as nickel sulphate.

Bleaching powder, or chloride of lime, is a white powder, smelling of chlorine, which should be free, it is well to particularly note, from any lumps. On exposure to the air it absorbs moisture and carbon dioxide, forming then a doughy mass. Mixed with a little water it evolves heat, and dissolves in 20 times its weight in water, a considerable residue always remaining. Chloride of lime should contain 35 to 40 per cent. active chlorine. It decomposes gradually when

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stored; the decomposition may even take the nature of an explosion. For preparing a solution one part of bleaching powder is mixed to a perfectly smooth paste with three parts of water, and diluted with three parts more of water; after settling, the pure solution is diluted to the desired strength. Chloride of lime is used for bleaching purposes; it should always be used in a perfectly clear solution because any particles remaining undissolved and settling on the goods will tender them, or cause them to go weak in strength. In order to increase the effect of the chloride of lime the colored goods are exposed to the air so that the carbon dioxide of the air may bring about the full effect of the hypochlorous acid. The goods are further weakly soured off. After the treatment with chloride of lime, or after the souring off, the goods should always be thoroughly rinsed if necessary with the addition of an anticlor, such as sodium, thio-sulphate, or bisulphite. Hypochlorites and bleaching solutions (which contain hypochlorites) are determined in exactly the same manner as chloride of lime. The following method of testing the hypochlorite liquors in the bleach house has been proposed by R. Baur, and it is of much interest: For the titration of the bleaching liquors in use a "thiosulphate" burette graduated into 1-5 c.c., and a "chlorine tube" are required. The latter is a glass tube of about 1½ c.m. (3-5 inch) width, and 50 c.m. (20 inches) length, closed at one end. Hydrochloric acid, potassium iodide, and a thiosuphate solution containing 6.95 grms. sodium thiosulphate in one litre water are used for testing. This solution, each c.c. of which corresponds to 1 m.g. (0.001 grm.) of active chlorine, is filled into the "thiosulphate burette." The "chlorine tube" is filled with 10 c.c. of the old chlorine liquor from the bleach house, and a few c.c. of a solution of potassium iodide are added until, on gently shaking, the liquor no longer becomes brown or turbid. When this point has been reached a few c.c. of hydrochloric acid are added until the turbid liquor has become quite clear (brown). The thiosulphate solution is now added pretty quickly at first, and then drop by drop until the color which on moderately shaking had gradually turned a paler yellow suddenly disappears. Each c.c. of sodium thiosulphate solution added indicates 1 m.g. (0.001 grm.) of active chlorine in 10 c.c. of bleaching liquor.—*Textile American.*

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Addition to Wetzel Staff

B. Franklin Lippold, who has for some time past had charge of the New York City sales department for Dicks, David Co., Inc., has severed his connection with that concern and on July 1st joined the force of Fred Wetzel & Co., Inc., with whom he will occupy a similar position. Mr. Lippold's addition to the Wetzel staff is in keeping with the progressive policy of this firm which has been rapidly enlarging its field of activities during the past year.

Evidences of activity on the part of English dye concerns is shown by the action of the directors of the Yorkshire Indigo Scarlet and Color Dyers Co., in calling a meeting to consider capitalizing £38,822 from the reserve and other accounts, and to add 50 per cent. to the value of preferred and ordinary shares.

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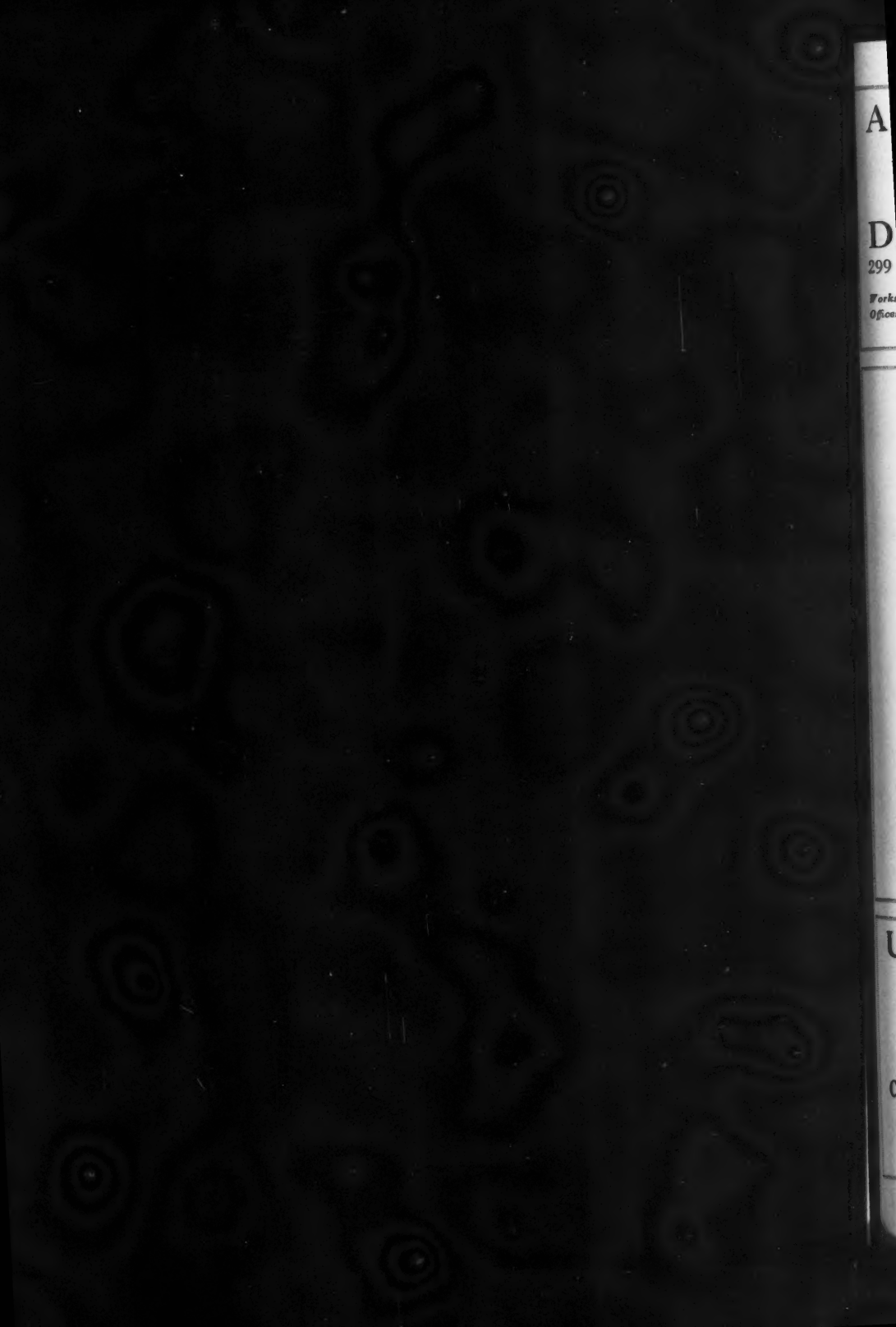

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The application of dyestuffs to textiles is as important as their production. The technique of this branch of the color industry has for years commanded the best talent among those dyestuff distributors who have catered to the highest class of trade.

An intimate knowledge of the possibilities of every dyestuff is often necessary to meet the particular requirements of the consumer. Dyeing is a chemical, not a mechanical process, and the variation of local conditions, due to differences in quality of water, steam and chemicals, makes the dyehouse problem an individual one.

Such problems are welcomed by the technical department of this company, which is manned by chemists who have been picked because of their knowledge, practical experience and demonstrated ability. We have long maintained well-equipped laboratories at our different offices for this purpose, and invite inquiries and extend, without any obligation on the part of our customers, our services to all who stand in need of them.

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